AMENDMENTS TO CLAIMS

1-36 (Previously canceled)

37-72 (Canceled)

73. (Currently amended) A method for preserving nucleated cells having lipid membranes, comprising:

a. Reversibly porating the lipid membranes of the nucleated cells;

b. Loading the porated nucleated cells with a bio-preserving agent having bio-preservation properties to a predetermined intracellular concentration to preserve a cellular material, the predetermined intracellular concentration of the bio-preserving agent being less than or equal to about 1.0 M;

c. Preparing the bio-preservation agent loaded nucleated cells for storage by a method selected from the group consisting of cryopreserving, freeze drying, and drying without the use of a freezing step; and

d. Storing the prepared nucleated cells so that they can be recovered to a viable state in which the ~~mammalian~~ nucleated cells survive and grow.

74. (Previously amended) The method of claim 73, wherein the nucleated cells are mammalian cells.

75. (Previously amended) The method of claim 74, wherein the nucleated cells are selected from the group consisting of hepatocytes, fibroblasts, chondrocytes, keratinocytes, islets of Langerhans and hematopoeitic cells.

76. (Previously added) The method of claim 73, wherein the lipid membranes are porated using a membrane toxin.

77. (Previously added) The method of claim 76, wherein the lipid membranes are reversibly porated using a *Staphylococcus aureus* α-toxin.

78. (Previously added) The method of claim 77, wherein the lipid membranes are reversibly porated using H5 α-toxin.

79. (Previously added) The method of claim 78, wherein the step of reversibly porating the lipid membranes comprises forming pores of at least about 2.0 nanometers in the lipid membranes.

80. (Previously added) The method of claim 73, wherein the bio-preservation agent comprises a non-permeating sugar having bio-preservation properties.

81. (Previously added) The method of claim 80, wherein the sugar having bio-preservation properties is selected from a group consisting of trehalose, sucrose, glucose, and maltose.

82. (Previously amended) The method of claim 80, wherein the bio-preservation agent consists essentially of the sugar selected from the group consisting of trehalose, sucrose, glucose, and maltose.

83. (Previously amended) The method of claim 73, wherein the nucleated cells are loaded with an intracellular concentration of a bio-preservation agent less than or equal to about 0.4M.

84. (Previously amended) The method of claim 73, wherein the bio-preservation agent loaded nucleated cells are prepared for storage by freezing to cryogenic temperatures to permit cryogenic storage of the nucleated cells.

85. (Previously amended) The method of claim 73, wherein the bio-preservation agent loaded nucleated cells are prepared for storage by freeze drying to permit dry storage of the nucleated cells.

86. (Previously amended) The method of claim 85, wherein the bio-preservation agent loaded nucleated cells are plunge frozen to a cryogenic temperature.

87. (Previously amended) The method of claim 73, wherein the bio-preservation agent loaded nucleated cells are prepared for storage by vacuum or air drying to permit dry storage of the nucleated cells.

88. (Previously amended) The method of claim 80, wherein the bio-preservation agent further comprises a penetrating cryoprotective agent.

89. (Previously added) The method of claim 88, wherein the bio-preservation agent comprises a penetrating cryoprotective agent selected from the group consisting of DMSO, glycerol and ethylene glycol.

90. (Currently amended) A method for preserving mammalian cells having lipid membranes, comprising:

a. Applying a membrane toxin to reversibly porate the lipid membranes of the mammalian cells;

b. Loading the porated mammalian cells with an agent having bio-preservation properties to a predetermined intracellular concentration sufficient for preserving the cellular material, the agent comprising a non-permeating sugar and the predetermined intracellular concentration of the agent being less than or equal to about 1.0 M;

c. Preparing the bio-preservation agent loaded mammalian cells for storage by a method selected from the group consisting of ~~cyropreserving,~~ cryopreserving, freeze drying, and drying without the use of a freezing step; and

d. Storing the prepared mammalian cells so that they can be recovered to a viable state in which the mammalian cells survive and grow.

91. (Previously added) The method of claim 90, wherein the lipid membranes are reversibly porated using a *Staphylococcus aureus* α-toxin.

92. (Previously added) The method of claim 91, wherein the lipid membranes are reversibly porated using H5 α-toxin.

93. (Previously added) The method of claim 92, wherein the step of reversibly porating the lipid membranes comprises forming pores of at least about 2.0 nanometers in the lipid membranes.

94. (Previously added) The method of claim 90, wherein the non-permeating sugar is selected from a group consisting of trehalose, sucrose, glucose, and maltose.

95. (Previously added) The method of claim 94, wherein the bio-preservation agent consists essentially of the sugar selected from the group consisting of trehalose, sucrose, glucose, and maltose.

96. (Previously added) The method of claim 90, wherein the mammalian cells are loaded with an intracellular concentration of bio-preservation agent less than or equal to about 0.4 M.

97. (Previously added) The method of claim 90, wherein the bio-preservation agent loaded mammalian cells are prepared for storage by freezing to cryogenic temperatures sufficient to permit cryogenic storage of the mammalian cells.

98. (Previously added) The method of claim 90, wherein the bio-preservation agent loaded mammalian cells are prepared for storage by freeze drying to a level sufficient to permit dry storage of the mammalian cells.

99. (Previously added) The method of claim 98, wherein the bio-preservation agent loaded mammalian cells are plunge frozen to a cryogenic temperature.

100. (Previously added) The method of claim 90, wherein the bio-preservation agent loaded mammalian cells are prepared for storage by vacuum or air drying to a level sufficient to permit dry storage of the mammalian cells.

101. (Previously added) The method of claim 94, wherein the bio-preservation agent further comprises a penetrating cryoprotective agent.

102. (Previously added) The method of claim 101, wherein the bio-preservation agent comprises a penetrating cryoprotective agent selected from the group consisting of DMSO, glycerol and ethylene glycol.